# UNITED STATES DEPARTMENT OF AGRICULTURE
# NATURAL RESOURCES CONSERVATION SERVICE

# ECOLOGICAL SITE DESCRIPTION

## ECOLOGICAL SITE CHARACTERISTICS

**Site Type**: Rangeland

**Site ID**: R037XA008NM

**Site Name**: Sodic Slopes

**Precipitation or Climate Zone**: 7 to 10 inches

**Phase**:

## PHYSIOGRAPHIC FEATURES

**Narrative**:

This site occurs on moderately sloping mesas, upland valleys and valley side slopes. The site is usually dissected by small drainageways, which often erode quite readily when the vegetation has deteriorated. Slopes are nearly level to moderately sloping, 3 to 8 percent. Elevations are from 5,600 to 6,400 feet above sea level.

**Land Form:**

1. Valley sides
2. Mesa
3.

**Aspect:**

1. N/A
2.
3.

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet)** | 5,600 | 6,400 |
| **Slope (percent)** | 3 | 8 |
| **Water Table Depth (inches)** | N/A | N/A |

| **Flooding:** | **Minimum** | **Maximum** |
|---|---|---|
| **Frequency** | None | Rare |
| **Duration** | None | Very brief |

| **Ponding:** | **Minimum** | **Maximum** |
|---|---|---|
| **Depth (inches)** | N/A | N/A |
| **Frequency** | N/A | N/A |
| **Duration** | N/A | N/A |

**Runoff Class**:

Negligible to medium.

## CLIMATIC FEATURES

**Narrative**:

This site has an arid, mild, dry climate with distinct seasonal temperature variations and large annual and diurnal temperature changes.

Mean annual precipitation varies from 7 to 10 inches. Deviations of 4 inches or more are quite common. Distribution is 65 percent during the native plant growth period, which is from April through September. May and June are the dry months. During July, August, and September, 3.5 inches of precipitation influences the presence and production of warm-season plants. Late fall and winter moisture is conducive to the production of cool-season plants, which usually begin growth in March and end with plant maturity and seed dissemination. This usually takes place in the early part of June when the moisture deficiency and warmer temperatures occur. The Gulf of Mexico is the principal source of moisture for summer precipitation, which is characterized by brief afternoon thunderstorms. Winter moisture occurs as light rain or snow.

Temperatures vary from a mean monthly of 75 degrees F in July to 27 degrees F in January. From a maximum of 106 degrees F to a minimum of 35 degrees F below zero. The average last killing frost in the spring is May 8, and the first killing frost in the fall is October 10. The frost-free season is approximately 160 days. Temperatures are conducive for native grass and forb growth from April through September. Maximum shrub growth occurs in the spring months.

The wind blows most frequently from an easterly direction, however, a majority of the stronger winds (10 to 25 miles per hour) are from a westerly quadrant. Spring is the windiest season. Average hourly wind velocities are near 6 miles per hour. Spring and summer winds increase transpiration rates of native plants and rapidly dry the surface soil. Small soil particles are often displaced by the wind near the soil surface and often results in structural damage to native plants, especially young seedlings.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days)**: | 114 | 151 |
| **Freeze-free period (days)**: | 143 | 177 |
| **Mean annual precipitation (inches)**: | 7 | 10 |

**Monthly moisture (inches) and temperature ($^0$F) distribution:**

| | Precip. Min. | Precip. Max. | Temp. Min. | Temp. Max. |
|---|---|---|---|---|
| January | .46 | .70 | 12.7 | 43.1 |
| February | .46 | .74 | 18.4 | 50.8 |
| March | .54 | .70 | 22.7 | 60.4 |
| April | .42 | .56 | 29.3 | 70.0 |
| May | .38 | .62 | 37.6 | 79.5 |
| June | .29 | .68 | 46.6 | 90.0 |
| July | .68 | 1.46 | 54.8 | 94.6 |
| August | .79 | 1.83 | 53.1 | 91.8 |
| September | .80 | 1.13 | 44.3 | 85.6 |
| October | .78 | 1.30 | 31.7 | 72.4 |
| November | .52 | .68 | 20.9 | 56.3 |
| December | .54 | .64 | 12.8 | 46.6 |

**Climate Stations**:

| | | | | | Period | | |
|---|---|---|---|---|---|---|---|
| Station ID | 291647 | Location | Chaco Canyon Natl. Monument, NM | From: | 06/01/22 | To: | 12/31/01 |
| Station ID | 293134 | Location | Farmington 3NE, NM | From: | 1971 | To: | 2000 |
| Station ID | 293340 | Location | Fruitland 2E, NM | From: | 01/01/14 | To: | 12/31/01 |
| Station ID | 296465 | Location | Otis, NM | From: | 02/01/14 | To: | 12/31/01 |
| Station ID | 298284 | Location | Shiprock, NM | From: | 08/01/26 | To: | 12/31/01 |

## INFLUENCING WATER FEATURES

**Narrative**:

This site is not influenced by water from a wetland or stream.

**Wetland description:**

| System | Subsystem | Class |
|---|---|---|
| N/A | | |

**If Riverine Wetland System enter Rosgen Stream Type**:

N/A

## REPRESENTATIVE SOIL FEATURES

**Narrative**:

The soils in this site are shallow to moderately deep. They are well drained and sodium affected. They have light colored surfaces with textures ranging from very fine sandy loam to silty clay loam 2 to 3 inches thick. The subsoils are clay and clay loam. Depth to shale bedrock is 14 to 24 inches. They are formed in material weathered from shale. Water intake rate is slow to very slow. Permeability is slow to very slow. The shallow soil and the sodium content restrict Root penetration. Available water-holding capacity is 2.0 to 4.0 inches. Potential wind and water erosion is high.

**Parent Material Kind**: Marine deposits
**Parent Material Origin**: Gypsum

**Surface Texture:**

| |
|---|
| 1. Fine sandy loam |
| 2. Clay |
| 3. Silty clay loam |
| 4. Very fine sandy loam |

**Surface Texture Modifier:**

| |
|---|
| 1. N/A |
| 2. |
| 3. |

**Subsurface Texture Group:** Clayey
**Surface Fragments <=3" (% Cover):** N/A
**Surface Fragments >3" (% Cover)**: N/A

**Subsurface Fragments <=3" (%Volume)**: 15 to 35
**Subsurface Fragments >=3" (%Volume)**: N/A

| | Minimum | Maximum |
|---|---|---|
| **Drainage Class**: | Well | Well |
| **Permeability Class**: | Very slow | Slow |
| **Depth (inches)**: | 14 | 65 |
| **Electrical Conductivity (mmhos/cm)**: | 0.00 | 8.00 |
| **Sodium Absorption Ratio**: | 5.00 | 30.00 |
| **Soil Reaction (1:1 Water)**: | 7.9 | 9.6 |
| **Soil Reaction (0.1M CaCl2)**: | N/A | N/A |
| **Available Water Capacity (inches)**: | 0 | 6 |
| **Calcium Carbonate Equivalent (percent)**: | N/A | N/A |

## PLANT COMMUNITIES

**Ecological Dynamics of the Site**:

**Plant Communities and Transitional Pathways (diagram)**

**Plant Community Name**: Historic Climax Plant Community

**Plant Community Sequence Number**: 1 **Narrative Label**: HCPC

**Plant Community Narrative**: Historic Climax Plant Community
The aspect of vegetation on this site is a shrub, grassland mixture characterized by short/mid-grasses; shrubs are quite noticeable. Perennial forbs are a minor component of the plant community. Annual forbs and grasses occur in relative abundance during spring months in years of above average growing conditions.

| | |
|---|---|
| Canopy Cover: | |
| Trees and shrubs | 15 % |
| Ground Cover (Aveage Percent of Surface Area). | |
| Grasses & Forbs | 10 |
| Bare ground | 65 |
| Surface cobble and stone | 0 |
| Litter (percent) | 10 |
| Litter (average depth in cm.) | .05 |

**Plant Community Annual Production (by plant type)**:

**Annual Production (lbs/ac)**

| Plant Type | Low | RV | High |
|---|---|---|---|
| **Grass/Grasslike** | 120 | 210 | 300 |
| **Forb** | 20 | 35 | 50 |
| **Tree/Shrub/Vine** | 60 | 105 | 150 |
| **Lichen** | | | |
| **Moss** | | | |
| **Microbiotic Crusts** | | | |
| **Total** | 200 | 350 | 500 |

**Plant Community Composition and Group Annual Production**:

**Plant Type - Grass/Grasslike**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 1 | SPAI | Alkali Sacaton | 88 – 105 | 88 – 105 |
| 2 | PLJA | Galleta | 53 – 70 | 53 – 70 |
| 3 | HECO26 | Needleandthread | 18 – 35 | 18 – 35 |
| 4 | ACHY | Indian Ricegrass | 35 – 53 | 35 – 53 |
| 5 | SPCR | Sand Dropseed | 11 – 18 | 11 – 18 |
| 6 | ARIST | Threeawn spp. | 11 – 18 | 11 – 18 |
| 7 | BOGR2 | Blue Grama | 18 – 35 | 18 – 35 |
| 8 | ELEL5 | Bottlebrush Squirreltail | 11 – 18 | 11 – 18 |

**Plant Type - Forb**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 9 | SENEC | Groundsel spp. | 7 – 11 | 7 – 11 |
| | PLPA2 | Wooly Indianwheat | | |
| | DESO2 | Tansymustard | | |

**Plant Type – Tree/Shrub/Vine**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| 10 | SAVE4 | Black Greasewood | 18 – 35 | 18 – 35 |
| 11 | ATCA2 | Fourwing Saltbush | 18 – 35 | 18 – 35 |
| 12 | ATCO | Shadscale | 11 – 18 | 11 – 18 |
| 13 | ARTR2 | Big Sagebrush | 11 – 18 | 11 – 18 |
| 14 | CHVI8 | Douglas Rabbitbrush | 4 – 11 | 4 – 11 |
| 15 | OPSP2 | Cholla | 4 – 11 | 4 – 11 |
| 16 | OPPO | Plains Pricklypear | 4 – 11 | 4 – 11 |
| 17 | GUSA2 | Broom Snakeweed | 7 – 11 | 7 – 11 |

**Plant Type - Lichen**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Moss**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Plant Type - Microbiotic Crusts**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|---|---|---|---|---|
| | | | | |
| | | | | |

Additional plants which usually grow on this site in varying amounts, dependent on current growing season conditions are: fluffgrass, annual bromegrass, Rocky Mountain beeplant, sunflowers, showy daisy, cutleaf daisy, gumweed, bull thistle, Russian thistle, sixweeks grama, sixweeks fescue and Indian paintbrush.

**Plant Growth Curves**

**Growth Curve ID** **0908NM**

**Growth Curve Name**: **HCPC**

**Growth Curve Description**: **A mixed shrub/grassland characterized by short/mid-grasses with a minor component of forbs.**

| Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 7 | 10 | 10 | 25 | 30 | 10 | 3 | 0 | 0 |

# ECOLOGICAL SITE INTERPRETATIONS

**Animal Community**:

Habitat for Wildlife:

This ecological site provides habitats which support a resident animal community that is characterized by pronghorn antelope, coyote, desert cottontail, Botta's pocket gopher, deer mouse, raven, scaled quail, house finch, western spadefoot toad and prairie rattlesnake.

The loggerhead shrike and mockingbird are summer residents.

**Hydrology Functions:**

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

**Hydrologic Interpretations**

| Soil Series | Hydrologic Group |
|---|---|
| Elias | C |
| Huerfano | ? |
| Muff | ? |
| Starlake | D |

**Recreational Uses**:

This site has low potential for outdoor recreation.

**Wood Products**:

No Data

**Other Products**:

Grazing:

This site is well suited for grazing use, when grazing within its capabilities, by cattle, sheep, horses, antelope, deer and burros.

Under pressure of uncontrolled grazing the potential plant community deteriorates, there is a marked increase in relative abundance of shrubs, cacti, perennial and annual forbs. In severe deterioration, the site will consist dominantly of shrubs, annual forbs and annual grasses, with lesser amounts of perennial grasses and large areas of unprotected soils.

**Other Information:**

**Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month**

| Similarity Index | Ac/AUM |
|---|---|
| 100 - 76 | 7.0 – 14.0 |
| 75 – 51 | 9.0 – 18.0 |
| 50 – 26 | 11.0 – 22.0 |
| 25 – 0 | 22.0+ |

| Plant Part | Code | Species Preference | Code |
|---|---|---|---|
| Stems | S | None Selected | NS |
| Leaves | L | Preferred | P |
| Flowers | F | Desirable | D |
| Fruits/Seeds | F/S | Undesirable | U |
| Entire Plant | EP | Not Consumed | NC |
| Underground Parts | UP | Emergency | E |
| | | Toxic | T |

**Plant Preference by Animal Kind**:

**Animal Kind**: Livestock
**Animal Type**: Cattle

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Alkali Sacaton | Sporobolus airoides | EP | D | D | D | D | D | P | P | P | U | U | U | D |
| Needleandthread | Hesperostipa comata | EP | D | D | P | P | P | D | D | D | D | D | D | D |
| Indian Ricegrass | Achnatherum hymenoides | EP | P | P | P | P | P | P | P | P | P | P | P | P |
| Blue Grama | Bouteloua gracilis | EP | D | D | D | D | P | P | P | P | P | D | D | D |

**Animal Kind**: Livestock
**Animal Type**: Horses

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Alkali Sacaton | Sporobolus airoides | EP | D | D | D | D | D | P | P | P | U | U | U | D |
| Needleandthread | Hesperostipa comata | EP | D | D | P | P | P | D | D | D | D | D | D | D |
| Indian Ricegrass | Achnatherum hymenoides | EP | P | P | P | P | P | P | P | P | P | P | P | P |
| Blue Grama | Bouteloua gracilis | EP | D | D | D | D | P | P | P | P | P | D | D | D |

**Animal Kind**: Livestock
**Animal Type**: Sheep

| Common Name | Scientific Name | Plant Part | Forage Preferences | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | F | M | A | M | J | J | A | S | O | N | D |
| Alkali Sacaton | Sporobolus airoides | EP | U | U | U | U | U | D | D | D | U | U | U | U |
| Blue Grama | Bouteloua gracilis | EP | D | D | D | D | P | P | P | P | P | D | D | D |
| Needleandthread | Hesperostipa comata | EP | D | D | P | P | P | D | D | D | D | D | D | D |
| Indian Ricegrass | Achnatherum hymenoides | EP | P | P | P | P | P | D | D | D | D | D | D | P |
| Sand Dropseed | Sporobolus cryptandrus | EP | U | U | U | U | D | D | D | U | U | U | U | U |
| Fourwing Saltbush | Atriplex canescens | L/S | P | P | P | P | P | D | D | D | D | D | D | P |

## SUPPORTING INFORMATION

**Associated sites**:

| Site Name | Site ID | Site Narrative |
|---|---|---|
| | | |

**Similar sites**:

| Site Name | Site ID | Site Narrative |
|---|---|---|
| | | |

**State Correlation**:

**This site has been correlated with the following sites**:

**Inventory Data References**:

| Data Source | # of Records | Sample Period | State | County |
|---|---|---|---|---|
| | | | | |

**Type Locality**:

**State**: New Mexico

**County**: San Juan

**Latitude**:

**Longitude**:

**Township**: 29 N

**Range**: 15 W

**Section**: 34

**Is the type locality sensitive?** Yes ☐ No ☐

**General Legal Description**: **A typical pedon of Huerfano silty clay loam, in San Juan County, New Mexico, 3 miles east of Morgan Lake, 2,206 feet east and 1,254 feet south of the northwest corner of section 34, T. 29 N., R. 15 W.**

**Relationship to Other Established Classifications**:

**Other References:**

Data collection for this site was done in conjunction with the progressive soil surveys within the San Juan River Valley, Mesas and Plateaus 37 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: San Juan, McKinley.

| **Characteristic Soils Are:** | |
|---|---|
| Elias, Huerfano, Muff, Starlake | |
| **Other Soils included are:** | |
| | |

**Site Description Approval:**

| Author | Date | Approval | Date |
|---|---|---|---|
| Don Sylvester | 03/07/79 | Don Sylvester | 03/07/79 |

**Site Description Revision:**

| Author | Date | Approval | Date |
|---|---|---|---|
| Elizabeth Wright | 07/08/02 | George Chavez | 2/12/03 |